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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,841	07/18/2003	Sridhar Srinivasan	3382-66126-01	4754

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EXAMINER	
ANYIKIRE, CHIKAODILI E	
ART UNIT	**PAPER NUMBER**
2621	

NOTIFICATION DATE	DELIVERY MODE
07/13/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/622,841	SRINIVASAN ET AL.	
	Examiner	Art Unit	
	CHIKAODILI E. ANYIKIRE	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,48-60,64-66 and 69-78* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,48-60,64-66 and 69-78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/6/2009 and 12/30/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :20040703, 20051003, 20051101, 20070529, 20080221.

DETAILED ACTION

1. This application is responsive to application number (10622841) filed on July 18, 2003. Claims 1-12, 48-60, 64-66, 69-78 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 26, 2010 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-3, 5-6, 11-12, 48, 51-53, 55, 69-71, and 74-78 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura).

As per **claim 1**, Machida discloses in a computer system, a method of encoding a video image in a video image sequence, wherein the video image is partitioned into sets of pixels, the method comprising:

encoding a set of pixels, including:

determining a value for a switch code (Fig 3, element 304 (inter/intra type control signal)), wherein the value for the switch code indicates whether the set of pixels is intra-coded or inter-coded (column 8 line 64 - column 9 line 5); and

jointly coding the value for the switch code (Fig 3 element 304 (inter/intra type control signal)) with motion vector information (Fig 3 element 301 and 313) for the set of pixels (column 8 line 64 - column 9 line 5).

However, Machida does not explicitly teach wherein a single variable length code represents the value for the switch code and the motion vector information, the single variable length code being selected from a variable length code table of different combinations for the switch code and the motion vector information.

In the same field of endeavor, Matsumura teaches the single variable length code being selected from a table (column 12 lines 61 – 67 and column 13 lines 1-4).

Therefore, it would have been obvious for one having skill in the art at time of the invention to modify the invention of Machida in view of Matsumura. The advantage is the multiple usage of codewords shortens the average codeword length (column 13 lines 3 – 4).

As per **claim 2**, Machida discloses the method of claim 1 wherein the set of pixels is a block (column 8 lines 21-47; Machida discloses using pixel blocks).

As per **claim 3**, Machida discloses the method of claim 1 wherein the set of pixels is a macro block (column 8 lines 21-47; Machida discloses using macroblocks).

Regarding **claim 5**, arguments analogous to those presented for claim 1 are applicable for claim 5.

As per **claim 6**, Machida discloses the method of claim 5 further comprising jointly coding additional data for the set of pixels with the extended motion vector code (column 8 line 64 - column 9 line 5; the prior art discloses that the output bitstream contains information related to the motion vector information and the type of coding, which leads to an extended motion vector code).

Regarding **claim 11**, arguments analogous to those presented for claim 2 are applicable for claim 11.

Regarding **claim 12**, arguments analogous to those presented for claim 3 are applicable for claim 12.

As per **claim 48**, Machida discloses a method of reconstructing one or more video images in a video sequence, the method comprising:

decoding (Fig 2) a set of pixels in an encoded bit stream (Col 15 Ln 23-32; it relates to the output video signal that is produced), wherein decoding comprises:

receiving an extended motion vector code for the set of pixels (Col 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream), wherein the extended motion vector code reflects joint encoding of motion information together with information indicating whether the set of pixels is intra-coded or inter-coded and with a terminal symbol (Col 12 Ln 60-67 and Col 13 Ln 22-28; the prior art discloses that the output bitstream contains information related to the motion vector information and the type of coding, which leads to an extended motion vector code as referred to by claim 5);

determining (Fig 2, element 54) whether transform coefficient for the set of pixels is included in the encoded bit stream based at least in part upon the extended motion vector code (col 15 lines 1-22; the demultiplexer detects the data within the extended motion vector code).

As per **claim 51**, Machida discloses the method of claim 48 wherein the motion information comprises motion vector information for a differential motion vector for the set of pixels (column 8 lines 30-40).

As per **claim 52**, Machida discloses the method of claim 48 wherein the extended motion vector code is preceded in the bit stream by header information

(column 8 Ln 14-18; the prior art clearly discloses in its code that there is a sequence header, which precedes the extended motion vector).

As per **claim 53**, Machida discloses the method of claim 48 wherein the extended motion vector code is followed in the bitstream by a coded block pattern data (Fig 2; column 8 lines 16-20; the prior art discloses using a coded block pattern, which in turn suggest that the data is coded with the motion vector information).

Regarding **claim 55**, arguments analogous to those presented for claim 3 are applicable for claim 55.

Regarding **claim 69**, arguments analogous to those presented for claim 48 are applicable for claim 69.

Regarding **claim 70**, arguments analogous to those presented for claim 5 are applicable for claim 70.

Regarding **claim 71**, arguments analogous to those presented for claim 48 are applicable for claim 71.

Regarding **claim 73**, arguments analogous to those presented for claim 4 are applicable for claim 73.

Regarding **claim 74**, arguments analogous to those presented for claim 51 are applicable for claim 74.

Regarding **claim 75**, arguments analogous to those presented for claim 52 are applicable for claim 75.

Regarding **claim 76**, arguments analogous to those presented for claim 53 are applicable for claim 76.

Regarding **claim 77**, arguments analogous to those presented for claim 54 are applicable for claim 77.

Regarding **claim 78**, arguments analogous to those presented for claim 51 are applicable for claim 78.

6. Claims 4, 50, and 73 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura (US 5,835,144) in further view of Shimoda et al (US 5,734,783, hereafter Shimoda).

As per **claim 4**, Machida discloses the method of claim 1 wherein the value for the switch code indicates the set of pixels is intra-coded (column 7 lines 54-60).

However, Machida does not explicitly teach and wherein the motion vector information comprises a pseudo motion vector.

In the same field of endeavor, Shimoda teach and wherein the motion vector information comprises a pseudo motion vector (Col 14 Ln 48-61; the prior art suggests that the inter/intra coding is decided by the amount of motion and that a motion detector is used to find a motion signal or motion vector; therefore the intra-frame would have a

motion vector due to it being based on a threshold for both intra frame and inter frame coding).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida with the pseudo motion of Shimoda. The advantage of combining the invention is decreasing the amount of distortion encoded for an image.

Regarding **claim 50**, arguments analogous to those presented for claim 4 are applicable for claim 50.

Regarding **claim 73**, arguments analogous to those presented for claim 4 are applicable for claim 73.

7. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) in further view of Sugimoto et al (US 5,650,829, hereafter Sugimoto).

As per **claim 9**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach the method of claim 5 further comprising jointly coding fading information for the video image with the extended motion vector code

In the same field of endeavor, Sugimoto et al discloses the method of claim 5 further comprising jointly coding fading information for the video image with the extended motion vector code (Col 15 Ln6-9; this section of the prior art discloses fade-in and fade-out information).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Purl with the fading information of Sugimoto. The advantage of combining the invention is decreasing the amount of distortion encoded for an image.

8. Claims 49 and 72 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) in further view of Tsukagoshi et al (US 2002/0106025, hereafter Tsukagoshi)

As per **claim 49**, Machida discloses the computer-readable medium of claim 48 wherein the extended motion vector code (Col 12 Ln 60-67).

However, Machida does not explicitly teach the computer-readable medium of claim 48 wherein the extended motion vector code indicates the set of pixels is skip-coded.

In the same field of endeavor, Tsukagoshi teach the computer-readable medium of claim 48 wherein the extended motion vector code indicates the set of pixels is skip-coded (paragraph [0043] and [0044]).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of modified invention of Machida with the skip-code of Tsukagoshi. The advantage would be an increased efficiency of encoding and decoding.

Regarding **claim 72**, arguments analogous to those presented for claim 49 are applicable for claim 72.

9. Claims 65 and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) in further view of well-known in the art.

As per **claim 65**, Machida discloses the computer-readable medium of claim 55.

However, Machida does not explicitly teach wherein the macroblock includes four blocks each comprising an 8.times.8 array of luminance pixels, and four blocks each comprising a 4.times.8 array of chrominance pixels.

In the same field of endeavor, it is well known in the art to apply different coding methods to different formats of the luminance and chrominance signals. Therefore, the examiner takes Official Notice.

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Purl with the well known of art of applying a coding method with different formats of the luminance and chrominance signal. The advantage is that the coding system applies to a wider range of video formats that are used today.

Regarding **claim 66**, arguments analogous to those presented for claim 65 are applicable for claim 66.

10. Claims 7-8, 10, 54, 56-60, and 64 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) (hereafter, the combination referred to as Machida) in further view of Purl (US 5,227,878).

As per **claim 7**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach wherein the video image is a bi-directionally predicted video image, further comprising jointly coding an index for a reference image for the predicted video image with the extended motion vector code.

In the same field of endeavor, Purl teaches wherein the video image is a bi-directionally predicted video image (Col 6 Ln 12-14; the prior art discloses the use of B-pictures, which are known to be bi-directionally predicted video images), further comprising jointly coding an index for a reference image for the predicted video image with the extended motion vector code (Col 16 Ln 28-51; this section of the prior art indicates that there are storage units for a previous and next frame. The storage units can serve as index to the reference image).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is the compression efficiency applied to coding a B-picture.

As per **claim 8**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach wherein the video image is a field-coded video image, further comprising jointly coding an index for a reference field for the field-coded video image with the extended motion vector code.

In the same field of endeavor, Purl teaches wherein the video image is a field-coded video image (Col 16 Ln 1-27; this section discloses a part of field-encoding as it relates to the claim), further comprising jointly coding an index for a reference field for the field-coded video image with the extended motion vector code (Col 16 Ln 28-51; this section of the prior art indicates that there are storage units for a previous and next frame. The storage units can serve as index to the reference image).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is the compression efficiency applied to coding in a interlace mode with regards to field.

As per **claim 10**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach further comprising jointly coding an entropy code table index for the video image with the extended motion vector code (Col 22 Ln 6-16; this section of the prior art discloses having VLC tables and VLC is entropy encoding).

In the same field of endeavor, Purl teaches further comprising jointly coding an entropy code table index for the video image with the extended motion vector code (Col 22 Ln 6-16; this section of the prior art discloses having VLC tables and VLC is entropy encoding).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

As per **claim 54**, Machida discloses the method of claim 48.

However, Machida does not explicitly teach wherein the determining is based on the terminal symbol indicating whether subsequent data is encoded for the set of pixels.

In the same field of endeavor, Purl teaches wherein the determining is based on the terminal symbol (Fig 1, element (block classification signal) indicating whether subsequent data is encoded for the set of pixels (Col 12 Ln 60-67)).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. A terminal symbol is already known in the art and commonly used as shown in Purl.

As per **claim 56**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach further comprising decoding a second extended motion vector code for the macroblock.

In the same field of endeavor, Purl teaches further comprising decoding a second extended motion vector code for the macroblock (Col 12 Ln 8-9; the prior art discloses having two motion vectors per macroblock, but this translates into an extended motion vector code because the additional information is combined to motion vector).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

Regarding **claim 57**, arguments analogous to those presented for claim 7 are applicable for claim 57.

As per **claim 58**, Machida discloses the method of claim 56.

However, Machida does not explicitly teach wherein the macroblock is a field-coded interlace macroblock.

In the same field of endeavor, Purl teaches wherein the macroblock is a field-coded interlace macroblock (Col 4 Ln 9-20; the prior art covers applying the invention to field-coded interlace macroblock)

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is the compression efficiency applied to coding in a interlace mode with regards to field.

As per **claim 59**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach further comprising receiving an extended motion vector code for each block in the macroblock (Col 4 Ln 14-16 and Col 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream and relates to each block).

In the same field of endeavor, Purl teaches further comprising receiving an extended motion vector code for each block in the macroblock (Col 4 Ln 14-16 and Col 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream and relates to each block).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

Regarding **claim 60**, arguments analogous to those presented for claim 53 are applicable for claim 60.

As per **claim 64**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach wherein the macroblock includes four blocks each comprising an 8x8 array of luminance pixels, and two blocks each comprising an 8x8 array of chrominance pixels (column 4 lines 53-57).

In the same field of endeavor, Purl teaches wherein the macroblock includes four blocks each comprising an 8x8 array of luminance pixels, and two blocks each comprising an 8x8 array of chrominance pixels (column 4 lines 53-57).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. Macroblocks are known in the field of coding as containing luminance and chrominance components as provided by the evidence of Purl.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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